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**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

IN RE APPLICATION OF:

Christian WALSDORFF, et al.

SERIAL NO: 10/567,579

GROUP: 1754

FILED: June 20, 2006

EXAMINER:

FOR: METHOD FOR THE PRODUCTION OF CHLORINE

**LETTER**

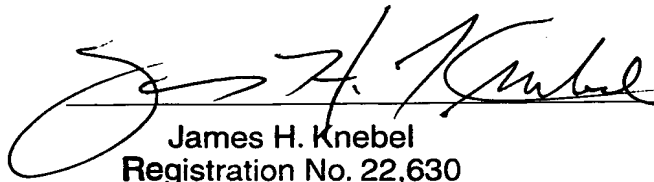
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P.O. Box 1450  
Alexandria, VA 22313-1450

Sir:

Submitted herewith are an International Preliminary Report on Patentability and Written Opinion for the Examiner's consideration. The reference(s) cited therein have been previously filed with the International Search Report in an Information Disclosure Statement submitted to the U.S. Patent and Trademark Office on June 20, 2006.

Respectfully Submitted,

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(OSMMN 03/06)

# PATENT COOPERATION TREATY

## PCT

### INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

(Chapter I of the Patent Cooperation Treaty)

(PCT Rule 44bis)

Applicant's or agent's file reference B03/0396PC	<b>FOR FURTHER ACTION</b>		See item 4 below
International application No. PCT/EP2004/008872	International filing date ( <i>day/month/year</i> ) 06 August 2004 (06.08.2004)	Priority date ( <i>day/month/year</i> ) 08 August 2003 (08.08.2003)	
International Patent Classification (8th edition unless older edition indicated) See relevant information in Form PCT/ISA/237			
Applicant BASF AKTIENGESELLSCHAFT			

- This international preliminary report on patentability (Chapter I) is issued by the International Bureau on behalf of the International Searching Authority under Rule 44 bis.1(a).
- This REPORT consists of a total of 6 sheets, including this cover sheet.  
  
In the attached sheets, any reference to the written opinion of the International Searching Authority should be read as a reference to the international preliminary report on patentability (Chapter I) instead.
- This report contains indications relating to the following items:
 

<input checked="" type="checkbox"/> Box No. I	Basis of the report
<input checked="" type="checkbox"/> Box No. II	Priority
<input type="checkbox"/> Box No. III	Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
<input type="checkbox"/> Box No. IV	Lack of unity of invention
<input checked="" type="checkbox"/> Box No. V	Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
<input type="checkbox"/> Box No. VI	Certain documents cited
<input type="checkbox"/> Box No. VII	Certain defects in the international application
<input type="checkbox"/> Box No. VIII	Certain observations on the international application
- The International Bureau will communicate this report to designated Offices in accordance with Rules 44bis.3(c) and 93bis.1 but not, except where the applicant makes an express request under Article 23(2), before the expiration of 30 months from the priority date (Rule 44bis .2).

The International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland  Facsimile No. +41 22 338 82 70		Date of issuance of this report 03 July 2006 (03.07.2006)  Authorized officer  Yolaine Cussac  e-mail: pt11@wipo.int
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# PATENT COOPERATION TREATY

Translation

From the  
INTERNATIONAL SEARCHING AUTHORITY

To:

PCT

WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING AUTHORITY

(PCT Rule 43bis.1)

Applicant's or agent's file reference <b>B03/0396PC</b>		Date of mailing (day/month/year)
		FOR FURTHER ACTION See paragraph 2 below
International application No. <b>PCT/EP2004/008872</b>	International filing date (day/month/year) <b>06.08.2004</b>	Priority date (day/month/year) <b>08.08.2003</b>
International Patent Classification (IPC) or both national classification and IPC		
Applicant <b>BASF AKTIENGESELLSCHAFT</b>		

1. This opinion contains indications relating to the following items:

- ☒ Box No. I Basis of the opinion
- ☒ Box No. II Priority
- ☐ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- ☐ Box No. IV Lack of unity of invention
- ☒ Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- ☐ Box No. VI Certain documents cited
- ☐ Box No. VII Certain defects in the international application
- ☐ Box No. VIII Certain observations on the international application

2. FURTHER ACTION

If a demand for international preliminary examination is made, this opinion will be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA") except that this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1bis(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of 3 months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

3. For further details, see notes to Form PCT/ISA/220.

Name and mailing address of the ISA/IEP	Authorized officer
Facsimile No.	Telephone No.

WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING AUTHORITY

International application No.

PCT/EP2004/008872

Box No. II

Priority

1. ☒ The following document has not yet been furnished:

☒ copy of the earlier application whose priority has been claimed (Rule 43bis.1 and 66.7(a)).

☐ translation of the earlier application whose priority has been claimed (Rule 43bis.1 and 66.7(b)).

Consequently it has not been possible to consider the validity of the priority claim. This opinion has nevertheless been established on the assumption that the relevant date in the claimed priority date.

2. ☐ This opinion has been established as if no priority had been claimed due to the fact that the priority claim has been found invalid (Rules 43bis.1 and 64.1). Thus for the purposes of this opinion, the international filing date indicated above is considered to be the relevant date.

3. Additional observations, if necessary:

**WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING AUTHORITY**

International application No.

PCT/EP2004/008872

**Box No. V** Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability:  
citations and explanations supporting such statement

**1. Statement**

Novelty (N)	Claims <u>1-6</u>	YES
	Claims _____	NO
Inventive step (IS)	Claims <u>1-6</u>	YES
	Claims _____	NO
Industrial applicability (IA)	Claims <u>1-6</u>	YES
	Claims _____	NO

**2. Citations and explanations:**

Novelty and inventive step (PCT Article 33(2) and (3))

The present application claims a process for preparing chlorine by catalytic oxidation of HCl.

The process includes 2 oxidation stages. First, O<sub>2</sub> and HCl are reacted partly in a catalytic fluidized bed. Thereafter, O<sub>2</sub> and HCl are reacted further in the product stream comprising Cl<sub>2</sub>, H<sub>2</sub>O, O<sub>2</sub> and HCl in a catalytic fixed bed, and Cl<sub>2</sub> is obtained.

As a result of the division into first one fluidized bed stage, it is possible for high space-time yields to proceed at high temperatures without formation of hotspots. The high temperatures in the fluidized bed stage do not impair the achievable yields, since it is possible to work with low temperatures in the downstream fixed bed in order to achieve the thermodynamic achievable yields. The risk of hotspots in the fixed bed is low, since the reactants are present diluted with products.

*filed 6/20/06*

The closest prior art is represented by EP-1 170.250 A. This document discloses a process for preparing chlorine by catalytic oxidation of HCl, comprising two reaction

WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING AUTHORITY

International application No.

PCT/EP2004/008872

Box No. V

Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability;  
citations and explanations supporting such statement

zones comprising fixed beds. The temperatures are controlled by means of heat exchangers in order to prevent the formation of hotspots. Catalytic fluidized bed stages are not disclosed.

Further documents cited in the search report

~~US 5,908,607~~ A discloses a process for preparing chlorine by catalytic oxidation of HCl. Catalytic fixed beds or fluidized beds can be used. Both together is not disclosed.

~~DE 40,045,454~~ A discloses a process for preparing chlorine by catalytic oxidation of HCl, comprising two reaction zones comprising fluidized beds. In the first stage, CuO is converted to CuCl<sub>2</sub>. In the second stage, CuCl<sub>2</sub> is converted to CuO by means of O<sub>2</sub>. Catalytic fixed bed stages are not disclosed.

There is no stimulus to a combination of these documents in the sense of the claimed invention. There is therefore evidence of an inventive step.

filed  
6/20/06